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     (FILE 'HOME' ENTERED AT 10:51:34 ON 12 NOV 2002)

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L1        641579 5
L2        162902 CARBON########
L3        191523 DOP########
L4             0 SILICON ADJ CARBIDE
L5          9321 SILICON (A)CARBIDE
L6          6346 L2 (P)L3
L7           156 L5 (P)L6
L8       1193469 NOR B OR AL OR GA OR IN OR P OR AS OR SB OR SE OR ZN OR O OR AU
L9            76 L7 AND L8
L10       133704 VAP#######
L11       341500 SILICON OR SI
L12          156 L7 AND L11
L13       569390 LAYER OR COAT##### OR FILM
L14        23505 L11 (2A)L13
L15           12 L7 AND L14
L16         1225 CARBONIZ#######
L17           53 L14 (P)L16
L18           16 L8 AND L17
L19            4 L17 AND L3

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119 1-4 all

L19 ANSWER 1 OF 4 INSPEC COPYRIGHT 2002 IEE
AN 1998:6041574 INSPEC DN A9822-6855-009; B9811-0520F-055
TI SiC crystallization in **carbonized** Si(111) layers.
AU Lei Tianmin; Chen Zhiming; Ma Jianping; Yu Mingbin (Xi'an Univ. of Technol., Xi'an, China)
SO Chinese Journal of Semiconductors (April 1997) vol.18, no.4, p.317-20. 6 refs.
Published by: Science Press
CODEN: PTTPDZ ISSN: 0253-4177
SICI: 0253-4177(199704)18:4L.317:CCL;1-X
DT Journal
TC Experimental
CY China
LA Chinese
AB The surface of the silicon substrates on which 3C-SiC thin layers are to be epitaxially grown is **carbonized** by using carbide gas diluted with hydrogen in a HFCVD system, with a filament temperature of 2000 degrees C and a substrate temperature of 950-1100 degrees C. The **carbonized** layers were characterized by X-ray diffraction, electron diffraction and auger electron spectroscopy etc. It is found that the **carbonized** layers consist of a highly carbon-**doped** **silicon** sub-**layer**, a 3C-SiC crystalline sub-**layer** and a **silicon-doped** 3C-SiC crystalline sub-layer. Under the appropriate processing conditions, the proportion of 3C-SiC crystalline sub-layer can be adjusted.
CC A6855 Thin film growth, structure, and epitaxy; A8115H Chemical vapour deposition; A7920F Electron-surface impact: Auger emission; A8160C Surface treatment and degradation of semiconductors; B0520F Vapour deposition; B2520M Other semiconductor materials; B2550E Surface treatment for semiconductor devices
CT AUGER EFFECT; CHEMICAL VAPOUR DEPOSITION; CRYSTALLISATION; ELECTRON DIFFRACTION; SEMICONDUCTOR MATERIALS; SEMICONDUCTOR THIN FILMS; SILICON COMPOUNDS; SURFACE TREATMENT; X-RAY DIFFRACTION
ST **carbonized Si(111) layers**; 3C SiC crystallization; epitaxial growth; HFCVD; X-ray diffraction; electron diffraction; Auger electron spectroscopy; 950 to 1100 degC; Si; SiC
CHI Si sur, Si el; SiC sur, Si sur, C sur, SiC bin, Si bin, C bin
PHP temperature 1.22E+03 to 1.37E+03 K
ET C*Si; SiC; Si cp; cp; C cp; Si; C-SiC; C

L19 ANSWER 2 OF 4 INSPEC COPYRIGHT 2002 IEE
AN 1992:4297987 INSPEC DN A9302-8115H-031; B9301-0510D-056
TI Effect of Al **doping** on low-temperature epitaxy of 3C-SiC/Si by chemical vapor deposition using hexamethyldisilane as a source material.
AU Takahashi, K.; Nishino, S.; Saraie, J. (Dept. of Electron. & Inf. Sci., Kyoto Inst. of Technol., Kyoto, Japan)
SO Applied Physics Letters (26 Oct. 1992) vol.61, no.17, p.2081-3. 13 refs.
Price: CCCC 0003-6951/92/422081-03$03.00
CODEN: APPLAB ISSN: 0003-6951
DT Journal
TC Experimental
CY United States
LA English
AB Low-temperature growth of 3C-SiC by atmospheric-pressure chemical vapor deposition was carried out using hexamethyldisilane (Si2(CH3)6) as a source material. Single-crystal undoped SiC was grown on Si(111) without employing a **carbonized** buffer **layer** and on **Si** (100) with a buffer layer. In the case of adding Al(CH3)3 to the source gas, the Al-**doped** initial layer works as a buffer layer which controls the initial nucleation. The Al **doping** lowers the

epitaxial temperature of this gas system down to 1000 degrees C.
CC A8115H Chemical vapour deposition; A6855 Thin film growth, structure, and epitaxy; A7155F Tetrahedrally bonded nonmetals; B0510D Epitaxial growth; B2520M Other semiconductor materials; B2550B Semiconductor doping
CT ALUMINIUM; IMPURITY ELECTRON STATES; SEMICONDUCTOR **DOPING**; SEMICONDUCTOR EPITAXIAL LAYERS; SEMICONDUCTOR GROWTH; SEMICONDUCTOR MATERIALS; SILICON COMPOUNDS; VAPOUR PHASE EPITAXIAL GROWTH
ST RHEED; semiconductor; CVD; low-temperature epitaxy; chemical vapor deposition; Si-SiC:Al
CHI Si-SiC:Al int, SiC:Al int, SiC int, Al int, Si int, C int, SiC:Al ss, Al ss, Si ss, C ss, SiC bin, Si bin, C bin, Al el, Si el, Al dop
ET Al; C*Si; SiC; Si cp; cp; C cp; C-SiC; C*H*Si; (Si2(CH3)6); H cp; Si; C*H*Al; Al(CH3)3; Al cp; C; C*Al*Si; C sy 3; sy 3; Al sy 3; Si sy 3; SiC:Al; Al doping; doped materials; Si-SiC:Al

L19 ANSWER 3 OF 4 INSPEC
AN 1988:3179061 INSPEC DN B88044778
TI Inversion-type MOS field effect transistors using CVD grown cubic SiC on Si.
AU Shibahara, K.; Takeuchi, T.; Saitoh, T.; Nishino, S.; Matsunami, H. (Dept. of Electr. Eng., Kyoto Univ., Japan)
SO Novel Refractory Semiconductors Symposium
Editor(s): Emin, D.; Aselage, T.L.; Wood, C.
Pittsburgh, PA, USA: Mater. Res. Soc, 1987. p.247-52 of xix+418 pp. 13 refs.
Conference: Anaheim, CA, USA, 21-23 April 1987
Sponsor(s): Mater. Res. Soc.
ISBN: 0-931837-64-2
DT Conference Article
TC Practical; Experimental
CY United States
LA English
AB Inversion-type n-channel MOSFETs of cubic-SiC were successfully fabricated. MOSFETs were fabricated on an antiphase-domain free **layer** grown on **Si**(100) by **carbonization** and subsequent chemical vapor deposition. An ion implantation technique was used to form the source and drain of the MOSFETs. A gate oxide of SiO2 was formed by thermal oxidation of SiC. Inversion mode operation was confirmed for the first time. Annealing temperature dependence of electrical characteristics of P+ and N2+ implanted layers and characteristics of p-n junction diodes fabricated using the ion implantation technique were also investigated.
CC B0510D Epitaxial growth; B2550B Semiconductor doping; B2550E Surface treatment and oxide film formation; B2560R Insulated gate field effect transistors
CT INSULATED GATE FIELD EFFECT TRANSISTORS; ION IMPLANTATION; OXIDATION; SEMICONDUCTOR **DOPING**; SEMICONDUCTOR GROWTH; SEMICONDUCTOR MATERIALS; SILICON COMPOUNDS; VAPOUR PHASE EPITAXIAL GROWTH
ST semiconductor; annealing temperature dependence; P+ implanted layers; inversion-type n-channel MOSFETs; MOS field effect transistors; CVD grown cubic SiC on Si; antiphase-domain free layer; Si(100); **carbonization**; chemical vapor deposition; source; drain; gate oxide; thermal oxidation; electrical characteristics; N2+ implanted layers; p-n junction diodes; ion implantation technique; SiC; SiO2; Si
CHI SiC int, Si int, C int, SiC bin, Si bin, C bin; SiO2 int, O2 int, Si int, O int, SiO2 bin, O2 bin, Si bin, O bin; Si sur, Si el
ET C*Si; SiC; Si cp; cp; C cp; Si; C*Si; SiO2; O cp; P; P+; P ip 1; ip 1; N2; N2+; N2 ip 1; SiO; O

L19 ANSWER 4 OF 4 INSPEC
AN 1988:3179052 INSPEC DN A88094458; B88043898
TI Highly mismatched hetero-epitaxial growth of cubic SiC on Si.

AU Matsunami, H. (Dept. of Electr. Eng., Kyoto Univ., Japan)
SO Novel Refractory Semiconductors Symposium
Editor(s): Emin, D.; Aselage, T.L.; Wood, C.
Pittsburgh, PA, USA: Mater. Res. Soc, 1987. p.171-82 of xix+418 pp. 34 refs.
Conference: Anaheim, CA, USA, 21-23 April 1987
Sponsor(s): Mater. Res. Soc.
ISBN: 0-931837-64-2
DT Conference Article
TC Experimental
CY United States
LA English
AB Single crystals of cubic SiC were hetero-epitaxially grown on Si by chemical vapor deposition (CVD) method. A **carbonized** buffer **layer** on **Si** is utilized to overcome the large lattice mismatch of 20%. Optimum conditions to make the buffer layers and those structures are discussed. Crystal quality of the CVD grown cubic SiC is analyzed by using X-ray analyses and microscopic observations. Electrical properties controlled by impurity **doping** during epitaxial growth are described together with fundamental electronic devices.
CC A6170T Doping and implantation of impurities; A6855 Thin film growth, structure, and epitaxy; A8115H Chemical vapour deposition; B0510D Epitaxial growth; B2520M Other semiconductor materials; B2550B Semiconductor doping
CT SEMICONDUCTOR **DOPING**; SEMICONDUCTOR GROWTH; SEMICONDUCTOR MATERIALS; SILICON COMPOUNDS; VAPOUR PHASE EPITAXIAL GROWTH; X-RAY DIFFRACTION EXAMINATION OF MATERIALS
ST semiconductor; single crystals; electrical properties; highly mismatched heteroepitaxial growth; crystal quality; cubic SiC; chemical vapor deposition; **carbonized buffer layer**; large lattice mismatch; X-ray analyses; microscopic observations; **impurity doping**; electronic devices; Si; SiC
CHI SiC bin, Si bin, C bin; Si sur, Si el
ET C*Si; SiC; Si cp; cp; C cp; Si

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ANSWER 21 OF 31 INSPEC COPYRIGHT 2002 IEE

AN 1994:4728093 INSPEC DN A9418-8115H-021; B9409-0520F-045

TI SiC silicon-on-insulator structures by direct carbonization conversion and postgrowth from silacyclobutane.

AU Steckl, A.J.; Yuan, C. (Dept. of Electr. & Comput. Eng., Cincinnati Univ., OH, USA); Tong, Q.-Y.; Gosele, U.; Loboda, M.J.

SO Journal of the Electrochemical Society (June 1994) vol.141, no.6, p.L66-8. 10 refs.
Price: CCCC 0013-4651/94/$5.00+0.00
CODEN: JESOAN ISSN: 0013-4651

DT Journal

TC Experimental

CY United States

LA English

AB SiC on insulating substrates has been achieved by the propane **carbonization** of the **Si** device **layer** of (100) **Si** SOI structures. Subsequent growth with silacyclobutane has resulted in SiC films of 0.5 to 1 mu m. The SiC films were very smooth and featureless, and the SiC/SiO2 interface was void-free. FTIR absorption measurements of the SiC SOI structure exhibited peaks at approximately 800 and approximately 1100 cm-1 indicating the presence of only Si-C and Si-Ox bonding. The FWHM of the Si-C IR line is 25 cm-1. X-ray diffraction measurements exhibit only the SiC (200) peak, confirming the 3C-SiC polytype. Auger depth profiling of the SiC SOI structure indicates an SiC film of uniform composition, and complete conversion of the original.

CC A8115H Chemical vapour deposition; A6855 Thin film growth, structure, and epitaxy; A7865J Nonmetals; A7830G Infrared and Raman spectra in inorganic crystals; A6848 Solid-solid interfaces; B0520F Vapour deposition; B2530F Metal-insulator-semiconductor structures

CT AUGER EFFECT; BONDS (CHEMICAL); CHEMICAL VAPOUR DEPOSITION; FOURIER TRANSFORM SPECTRA; INFRARED SPECTRA OF INORGANIC SOLIDS; INTERFACE STRUCTURE; POLYMORPHISM; SEMICONDUCTOR GROWTH; SEMICONDUCTOR-INSULATOR BOUNDARIES; SILICON COMPOUNDS; X-RAY DIFFRACTION EXAMINATION OF MATERIALS

ST SiC SOI structures; direct carbonization conversion; postgrowth; silacyclobutane; insulating substrates; Si device layer; SiC films; SiC/SiO2 interface; FTIR absorption; bonding; X-ray diffraction; polytype; Auger depth profiling; uniform composition; SiC-SiO2

CHI SiC-SiO2 int, SiO2 int, SiC int, O2 int, Si int, C int, O int, SiO2 bin, SiC bin, O2 bin, Si bin, C bin, O bin

ET C*Si; SiC; Si cp; cp; C cp; Si; O*Si; SiO2; O cp; Si-C; Si-Ox; C-SiC; C*O*Si; C sy 3; sy 3; O sy 3; Si sy 3; SiC-SiO2; SiO; SiC-SiO; O

ANSWER 5 OF 31 INSPEC COPYRIGHT 2002 IEE

AN 1999:6426395 INSPEC DN A2000-02-8115N-002; B2000-01-0520X-019

TI Transfer of ultrathin silicon layers to polycrystalline SiC substrates for the growth of 3C-SiC epitaxial films.

AU Hobart, K.D.; Kub, F.J.; Fatemi, M. (Naval Res. Lab., Washington, DC, USA); Taylor, C.; Eshun, E.; Spencer, M.G.

SO Journal of the Electrochemical Society (Oct. 1999) vol.146, no.10, p.3833-6. 17 refs.
Doc. No.: S0013-4651(99)03072-4
Published by: Electrochem. Soc
Price: CCCC 0013-4651/99/$7.00
CODEN: JESOAN ISSN: 0013-4651
SICI: 0013-4651(199910)146:10L.3833:TUSL;1-C

DT Journal

TC Practical; Experimental

CY United States

LA English

AB A novel approach for the production of large area 3C-SiC substrates is described. Ultrathin (<20 nm) Si seed layers were transferred to high purity polycrystalline 3C-SiC substrates through a unique wafer bonding process. The ultrathin **Si** seed **layer** was subsequently **carbonized** and used as the nucleation layer for high temperature (>1500 degrees C) growth of epitaxial 3C-SiC. The use of more optimal growth temperatures, not limited by the melting point of Si, led to 3C-SiC films of high crystalline quality. Double-crystal X-ray diffraction measurements of the 3C-SiC(200) reflection gave peak widths of 660 arcsec.

CC A8115N Thin film growth from solid phases; A6855 Thin film growth, structure, and epitaxy; B0520X Other thin film deposition techniques; B2520M Other semiconductor materials

CT NUCLEATION; SEMICONDUCTOR EPITAXIAL LAYERS; SEMICONDUCTOR GROWTH; SILICON COMPOUNDS; WAFER BONDING; WIDE BAND GAP SEMICONDUCTORS

ST ultrathin Si layers transfer; polycrystalline SiC substrates; 3C-SiC epitaxial films growth; wafer bonding process; nucleation layer; melting point; 1500 C; 20 nm; SiC

CHI SiC sur, Si sur, C sur, SiC bin, Si bin, C bin

PHP temperature 1.77E+03 K; size 2.0E-08 m

ET C*Si; SiC; Si cp; cp; C cp; C-SiC; Si; C